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ABSTRACT

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A look at a seminar in Individualized Instruction: Extending tutoring to develop a meaningful field experience prior to student teaching

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Abstract

What are some of the things we can do to create meaningful field experiences prior to student teaching? An attempt to cater to career-changers with day jobs led to the creation of a small tutor seminar group. The students tutored secondary mathematics students, met monthly as a group, and communicated with the instructor weekly through e-mail. Individualized assessment, lesson planning, instructional strategies and reflective journals helped students to explore how individualized instruction can inform classroom teaching. In this session, the course objectives and methods will be briefly discussed, and sample work and reflections of the tutor participants will be examined. This will lead the session's participants into a discussion of what creates a meaningful field experience, and what we can do to provide more of them for a wide range of student needs.

Introduction

Teacher education programs are committed to the assumption that people can learn how to teach. According to constructivism, we learn through experience – constructing our understanding, connecting the new experience to prior understanding. It is a small step from this to see why the intensive field experience, student teaching, is usually thought of as the most important component in a teacher education program (Brown & Borko, 1992). There is a need to make this experience as constructive as possible, so that graduates of teacher education programs can be good math teachers, consistent with NCTM's *Professional Teaching Standards* (1990).

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Researchers and personal experience agree that this can be a stressful time for the student teacher (Bowers, H.; Eicher, K.; & Sacks, A. ,1983). Can the transition from student to student-teacher be smoother? One recommendation is for meaningful field experience before the student teaching semester. In the state of New York, the State Department of Education has recently recognized the need for field experiences prior to student teaching, and will soon require at least 100 hours of it in teaching certification programs.

For a variety of reasons these field experiences are not so simple to provide. Undergraduates are not always traditional students. Many have full or part-time jobs. Graduate students may be career changers, working long days, unable to go into the schools. With the current and projected shortage of math teachers, there is a need to be creative, constructive and efficient in providing the right experiences. We look to instruction, supervision, practice and reflection.

This paper describes one option that has been tried to create a meaningful experience prior to student teaching, and observed results.

Background

The course, Advanced Seminar in Individualized Mathematics Instruction, was created at Manhattanville College, a small independent liberal arts college (about 1200 students) with a school of education (250 undergraduates, 650 graduates) in a suburb 25 miles north of NYC. Below are the program requirements needed to become certified to teach secondary (7-12) mathematics.

Undergraduates at Mville:

- Must be a math major (about 40 credits
- And an education minor (30 credits – a major minor).

Ed minors take:

Foundations Intro to the Exceptional Student Developmental Psychology General Methods Math Methods Problem Solving	12 credits of student teaching (one semester) with the accompanying weekly seminar.

Graduates at Mville:

- Pre-requisites for admission include 36 credits in mathematics and adolescent psychology.
- Secondary Math MAT program is 37 credits:

12 credits of graduate level	Foundations	6 credits of student teaching

mathematics courses	Intro to the Exceptional Student General Methods Math Methods Problem Solving 6 credits of electives	(one semester) with the accompanying weekly seminar

Most education courses for graduates and undergraduates require
classroom observations
lesson plans
presentations to peers

The student teaching experience represents about 500 hours of field time and 37.5 seminar hours. Student teaching is 15 weeks long, full school days. Half of the experience is in a middle school, half in a high school. A Field Supervisor conducts the weekly seminar and observes each student a minimum of four times during the semester. Student teachers

- write weekly lesson plans
- keep a reflective journal
- prepare a teaching portfolio which includes a philosophy statement, a classroom management statement, a middle school unit plan with sample lesson plans, the same for high school, unit rationales, and a final reflection on the student teaching experience.

For most students, student teaching is their first experience planning for actual classes and working with groups of students.

This course was designed to give students some experiences they needed for student teaching, but because of their scheduling constraints, they could not be in a classroom during the day. Since many students in the MAT program tutor high school students, a tutoring experience would serve to develop some teaching skills. Each student would have a tutee for the semester. They would plan for the session and then reflect on it and plan for the next session. Each week they turned in a plan and a reflection, received regular feedback and communicated via e-mail at least weekly, and met as a group monthly for three hours.

Course Objectives and Requirements

Objectives: Each seminar member will

- **Tutor** a mathematics student at least one hour a week for the entire semester.

- **Assess** student's needs and **plan** appropriately for individualized instruction each week.
- **Reflect**, evaluate and improve individualized instructional skills.
- Explore how individualized instruction skills can be adapted for classroom instruction.

Course requirements:

- Read required materials
- Submit instructional plans weekly (via e-mail) for feedback (via e-mail)
- Submit reflective journals weekly (via e-mail)
- Attend meetings every three weeks.
- Audio-tape record one tutoring session and submit it for review in the seminar
- Write a final self-evaluation

Course Syllabus

Meeting Topic	Reading assignment
1. Assessing students. How do you find out what students already know? Use of mind maps or graphic organizers.	Oppenheimer, Lauren and Robert Hunting. "Relating Fractions and Decimals: Listening to Students Talk." *Mathematics Teaching in the Middle School.* 4 (February, 1999): 318-321. Stenmark, Jean Kerr, ed. *Mathematics Assessment: Myths, Models, Good Questions, and Practical Suggestions.* Reston Va.: National Council of Teachers of Mathematics, 1991
2. Lesson planning: Creating objectives and planning a lesson. How do you know if the plan worked or What has the student learned?	Cowie, Bronwn and Jeanette Saunders. "Reflection." In *Mathematics Education: A Handbook for Teachers*, edited by J. Neyland , vol.1, 379-385. Wellington, New Zealand: Wellington College of Education, 1994
3. Reflection and revision: Listening to tapes. Reading each other's lesson plans. Constructive criticism and collaborative brainstorming.	Brooks, Karen and Marilyn Suydam, "Planning and Organizing Curriculum" in *Research Ideas for the Classroom: High School Mathematics* , edited by Patricia S Wilson, Reston Va.: National Council of Teachers of Mathematics, 1993.
4. Implications for the classroom: Assessing, Planning, Reflecting	

Additional readings were assigned as needed. However, the course kept reading to a minimum to use time for planning, writing and reflection. Sample student reflections follow.

Sample Student Reflections

(All names are fictional. Grammar, spelling, etc. are untouched.)

Assessment

This was the first time that I thought back on a tutoring session and actually wrote down my reflections. I am glad I did, because it gave me a chance to see if Judy was learning and if she was, what was it that she was taking away from the session.

I felt this was one of the more productive sessions and that the material really stuck with Judy. I need to remember that I should talk less and Judy talk more.

It was really interesting to hear [the twins] discuss a topic. It was a classic example right out of a book. By letting them talk and asking a few question their misconceptions came to light. I know this is suppose to happen it was just my first experience with being a part of it as a "teacher".

During this session I was focusing on my questioning… I want Judy to be able to ask herself questions in hopes of generating a thinking process… I also think that my questioning was done in a way which did not give the obvious answer but made Judy think and then come up with the answer on her own.

I believe that my questioning skills have strengthened, thanks to this class … My questions were thought provoking and most of them could not be answered with a one word response.

Next on a large right triangle she drew the altitude to the hypotenuse and compared the two resulting triangles with the original triangle. I had her measure all the sides of all three triangles and record them in a chart. I asked her what the chart could tell her. She looked at me with a totally confused look. I then asked if she noticed a pattern. She really studied that chart. It was very hard to wait for her and not give her any more clues. Finally she noticed that all the numbers in the first row could be multiplied by a factor to get the corresponding entries in the second row and a different factor to get the entries in the third row. I was kind of

surprised that it took her so long to make that connection. She was working on problems about similar triangles all week so I expected that to come quicker.

Planning/Revising

I then asked Judy to list any differences that she could see between the two. She thought for a minute and stated, "This one has a equal sign and the other one doesn't" … As I am writing this, I am thinking that if I were to try this again, I could write the similarities and differences in a table format under the two examples. This way she could have the information written down instead of relying solely on her memory. I think I will do that this Wednesday…

Another thing I realized is that when I create a lesson plan I have to be briefer in documenting it. During the session I would refer to my lesson plan and found myself searching through the document to find my spot. For it to be useful to me it has to be in list form with ideas bulleted.

I didn't get to do all that I planned and what I though would be a review for them turned out to be the crux of the lesson.

Final reflections of one seminar participant

The Advanced Seminar in Individualized Instruction in Mathematics was a very different experience for me. As you know, I tutor on a regular basis but I can't say that I took a lot of time out to assess my own learning. Oftentimes, I assess my students' learning, but this course has taught me to approach that quite differently.

For example, in Laurie's case, although we were able to identify her weakness as being triangles and circles, this course taught me how to identify what the problem actually is. This was done with the use of mind mapping or brainstorming which helped bring to both
Laurie's attention and mine, what she knew, didn't know, and what misconceptions she had about these shapes. We were able to clean up the wrong information, and also add to her list information about these shapes that she either forgot, or overlooked, or she just didn't know. A mind map can provide a lot of great insight to both student and teacher as it relates to finding out what one knows.

I really enjoyed sharing teaching methods with other tutors but appreciated the fact that it was a supervised session as we all know, one can easily pick up a technique that may not be very useful or that is implemented inappropriately. Your input made me feel comfortable enough to share my techniques as well as know whether it was safe to incorporate someone else's...

I have learned the importance of having my students share more for it is in this process that I can know what they know ... rather than assume that they know because they are shaking their heads as I speak. This was a valuable lesson. I now ask them why did they choose a particular answer and how did they come to this conclusion...So in essence, what I have done, is that I have become more in tune with particular problems that require a considerable amount of thinking, a sophisticated approach, or problems that for the most part are challenging for most students. I try to open those problems up for discussion even if the student got it right and in this manner, I can either be enlightened about a different approach (which often happens and is quite exciting), thus making the learning experience double-sided...

... This [course] has really been very useful as it has taught me to assess my own teaching skills, and to be very much aware of how I am presenting material to such a diverse group of people. The challenge I guess will be in the classroom at large...

A look at student teaching – A comparison of Individualized Instruction Seminar participants with the non-participants

The three students in the "tutoring" seminar went on to student teach two semesters later. In their student teaching group there were 4 other math student teachers, and two science student teachers. Their previous content area preparation and life experience was comparable. Here are some notable differences:

Issue	"Tutoring Seminar" Participants	The Others
Lesson Planning	Previous experience planning for 40 minutes, trying out the plan, and adjusting the plan during tutoring appeared to pay off. These participants found it easier to prepare lessons and had a more developed idea of what could be done in the limited amount of time. Cooperating teachers were impressed with their lesson plans from the beginning.	Without exception, they were anxious about creating lesson plans. They did not realize how long it took to prepare lessons. They were unrealistic about what could be done in 45 minute lessons. All but one needed quite a bit of support on this from the cooperating teachers; two of the cooperating teachers resented this. The cooperating teachers expect students who have gone through education courses to be able to plan lessons.
Receiving feedback from cooperating teachers	They were comfortable receiving feedback, and were initially better at asking for and incorporating feedback from their cooperating teachers.	Many felt they did not initially receive constructive feedback from their cooperating teachers. (Did they send signals that they weren't ready? Were they defensive?) Most of them had to be taught how to ask for what they needed from their cooperating teachers. More frustration was evident.

Attempting to find out what the student knows	They had a few techniques for doing this, and after a few days of teaching, they began to look for ways to incorporate these techniques and look for others for their lessons and in their wrap-ups.	They were more concerned with finding better ways to tell the students what they should know. It took many weeks (sometimes months) to develop an interest in finding out what the students knew or were learning.
Attempting to link what the student knows to the new learning	Lesson planning seemed to lead more consistently from what the students knew.	Lessons, especially initially, often seemed to assume students were blank slates. They were not initially as sensitive to student feedback.
Reflecting on the teaching/learning experience.	This did not seem to be affected.	

The course appeared to provide meaningful field experience. It will be repeated in the Fall 2000 semester, and will also incorporate a listserv to enable ongoing discussion among seminar members.

Other attempts to give students field experience at Manhattanville have been:

- Substitute teaching: Many graduate students substitute teach in local schools. We have a cooperative agreement with a local district whereby the district trains (for one day) a small number of undergraduates to be substitute teachers, and the undergraduates work one or two days a week for regular substitute pay.
- Homework helpers for a local high school: This is voluntary. Few math students participate because they can earn money tutoring.
- Summer program instructors for high school "bridge" or CSTEP programs. The college student teaching the course is on his/her own.

None of them incorporates supervision or explicitly requires reflection.

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